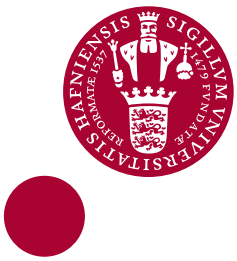

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The effect of dietary valine-to-lysine ratio on sow performance and piglet growth during lactation

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The aim of the study was to determine the effect of dietary valine-to-lysine ratio (Val:Lys) on BW, backfat thickness (BF) and litter gain of high producing lactating sows. Sixty second parity sows were allotted to one of six dietary treatments varying in standardized ileal digestible Val:Lys (76, 79, 82, 85, 91, and 97%) from day 2 postpartum. The sows were fed semi *ad libitum* 2 times per day until day 10 and from day 10 three times per day. Litters were equalized at day 2 to14 piglets and weaned at day 28. Sow BW and BF were recorded at day -7, 2, 18 and 28 of lactation. Litter weight and size were recorded at day 2, 10, 18 and at weaning. Differences in sow BW and BF were calculated as total change (day 2-28, n=26), change from day 2- 18 (n=38) and from day 18-27 (n=26). The ADG (kg/day) of the litter were calculated as total ADG (day 2-28, n=26) and for early (day 2-10, n=48), mid (day 10-18, n=38) and late (day 18-28, n=26) lactation. Data was analyzed in R using a linear model testing the effect of dietary treatment and block. The BW, BF and litter weight at standardization was used as covariate. There was no effect of treatment, block and litter weight at day 2 on litter size at weaning and ADG ($P>0.05$). The mean ADG was 3.08 kg/day (SD=0.52) and the mean litter size at weaning was 13.08 piglet (SD=1.02). The change in BF from day 2-18 ($P<0.01$) and day 18-28 ($P<0.05$) was affected by BF at day 2. Higher BF at standardization resulted in higher BF loss. There was a tendency for a dietary effect on BF change from day 2-18 ($P=0.08$). There was no dietary effect on change in BW ($P>0.05$). Sows fed the highest Val:Lys had the highest ADG (3.3 kg/day), BF loss (-6 mm) and BW loss (-40 kg). And sows fed a Val:Lys of 79% had the lowest ADG (2.9 kg/day), BF loss (-2.2 mm) and BW loss (-18.8 kg). In conclusion, the prelimenary results shows no effect of Val:Lys on piglet ADG, litter size and sow body condition.

Use of esterified palm acid oils with different acylglycerol structure in fattening pig diets

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Esterified acid oils are obtained by reacting acid oils with glycerol. Because these technical fats have an increased proportion of saturated fatty acids located at the acylglycerol sn-2 position, and a higher amount of mono- (MAG) and diacylglycerol (DAG) molecules than native oils, it was hypothesized that esterified acid oils could have higher nutritive value than their corresponding acid oils and even than their corresponding native oils for pigs. The aim of the present study was to compare the effects of esterified palm acid oils with different acylglycerol structure, with their corresponding acid (negative control) and native (positive control) oils in fattening pig diets. For this purpose, 72 pigs (36 boars and 36 gilts of 24.7±0.30 kg) were ranked by 9 blocks of initial weight, housed in adjacent individual boxes, and fed one of the 4 dietary treatments, which were the result of a basal diet supplemented with 4% of native palm oil (P-N), acid palm oil (P-A), esterified palm acid oil low in MAG and DAG (P-EL) or esterified palm acid oil high in MAG and DAG (P-EH). In addition, a balance study was conducted from d 6 to 9 using an inert marker. At the end of the trial (100 d), 6 pigs per treatment were slaughtered, and backfat was analyzed for fatty acid composition. Esterified palm acid oils achieved higher total fatty acid apparent absorption than their respective native and acid oils, mainly due to the increased saturated fatty acid apparent absorption. This resulted to an improved growth performance and an increased saturated fatty acid deposition in pigs fed with P-EH when compared to those fed P-A.

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